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10/580,461	05/25/2006	Hiroyasu Matsuzaki	M1071.1969	5524

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EXAMINER	
AKINYEMI, AJIBOLA A	
ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,461	MATSUZAKI ET AL.	
	Examiner	Art Unit	
	AJIBOLA AKINYEMI	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 12 objected to because of the following informalities: claim 12 cannot depend on claim 11 and also depend on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10, 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa (Pub. No.: US 2002/0089385A1).

With respect to claim 1:

Ishikawa discloses a radio-frequency amplifier comprising a substrate **(parag.0004, 0018);** an input-side line portion which formed on a the substrate **(parag.0006)** and including; an input slot line having a shorted end whose one end is shorted **(parag.0011),** the input- side line portion inputting electromagnetic-field-mode signal whose magnetic field is parallel to the input slot line into the input slot line **(parag.0030);** an output-side line portion formed on the substrate and including an output slot line arranged which is substantially parallel to the input slot line, the output slot line having a

shorted end and whose one end is shorted **(fig.5, item 11 which is the output);** and a transistor **(parag.0041)** which includes a connecting portion in which source electrodes are arranged on both opposite sides of a gate electrode, and a drain electrode arranged along a common line with the gate electrode **(parag.0041),** wherein the transistor and which is mounted on the substrate such that the gate electrode is positioned on the input slot line side **(fig.5, item 35)** the drain electrode is positioned on the output slot line side **(fig.5, item 36),** and the gate electrode and the drain electrode are oriented is perpendicular to the input slot line and the output slot line **(fig.5, item 35 and 36 are perpendicular to line-slot 10 and 11).**

With respect to claim 2:

Ishikawa discloses a radio-frequency amplifier according to Claim 1, wherein the input-side line portion includes a first DC cut line which branches off at almost substantially 90 degrees from the input slot line to a first edge of the substrate (fig.5, item 10a) and a second DC cut line which branches off from the input slot line at a second point relative to the first DC cut line to the first edge of the substrate (fig.5, item 10b) wherein the output-side line portion includes a third DC cut line which branches off from the output slot line in the a direction opposite to the first DC cut line to a second edge of the substrate (fig.5, item 11a) and a fourth DC cut line which branches off from the output slot line at a second point relative to the third DC cut line in a direction opposite to the second DC cut line to the second edge of the substrate (fig.5, item 11b) and wherein the transistor is mounted on the substrate such that the gate electrode of the connecting portion is connected to a first DC electrode separated by the first DC cut line and the

second DC cut line of the input-side line portion (fig.5, item 35 connected to input 10 through a conductor 37) and that the drain electrode is connected to a second DC electrode separated by the third DC cut line and the fourth DC cut line of the output-side line portion(fig.5, item 36 is the drain) and such that the both source electrodes are connected to a ground electrode separated by the input slot line, the first DC cut line, the output slot line, and the third DC cut line (fig.6, item 51 and 52 are source electrodes both connected to a ground electrode separated by the input slot line, the first DC cut line, the output slot line, and the third DC cut line).

With respect to claim 3:

Ishikawa discloses a radio-frequency amplifier wherein the gate electrode and the drain electrode of the transistor are arranged placed before the one ends of the input slot line and the output slot line respectively, by a distance of 1/4 wavelength from the shorted ends of the input slot line and the output slot line, respectively (parag.0036).

With respect to claim 4:

Ishikawa discloses a radio-frequency amplifier wherein the first and second DC cut lines include stubs that are located at positions of 1/4 wavelength from branch points of the input slot line, and wherein the third and fourth DC cut lines include stubs that are located are placed at positions of 1/4 wavelength from branch points of the output slot line (parag.0036 and fig.5).

With respect to claim 5:

Ishikawa discloses a radio-frequency amplifier according to Claim 1 wherein an air bridge to electrically connect the both source electrodes is provided in the connecting portion of the transistor (fig.6).

With respect to claim 6:

Ishikawa discloses a radio-frequency amplifier according to Claim 2 wherein a part of the input slot line between the first DC cut line and the second DC cut line is curved toward the output slot line side and a part of the output slot line between the third DC cut line and the fourth DC cut line is curved toward the input slot line side so that pad portions are formed on the first and second DC electrodes, and wherein the gate electrode and the drain electrode are connected to the pad portions of the first and second DC electrodes, respectively (fig. 8, 10 shows the curve towards the input and output slot line toward FET 50).

With respect to claim 7:

Ishikawa discloses a radio-frequency amplifier according wherein the connecting portion of the transistor faces the substrate, and wherein the gate electrode, the drain electrode, and the both source electrodes are connected to the first and second DC electrodes and the ground electrode, respectively, using bumps (parag.0042 and fig.6).

With respect to claim 8:

Ishikawa discloses a radio-frequency amplifier wherein the connecting portion of the transistor is oriented to the side opposite to the substrate, wherein the gate electrode and the drain electrode are connected to the first and second DC electrodes,

respectively, via wires, and wherein the both source electrodes are connected to the ground electrode via through holes provided in the transistor (parag.0041).

With respect to claim 9:

Ishikawa discloses a radio-frequency amplifier wherein the gate electrode, the drain electrode, and the both source electrodes are connected to the pad portions of the first and second DC electrodes and the ground electrode, respectively, via through holes provided in the transistor (parag.0041).

With respect to claim 10:

Ishikawa discloses a radio-frequency amplifier wherein one or more heat-dissipating through holes are provided in a portion of the substrate corresponding to a connecting position of the transistor (parag.0041).

With respect to claim 13:

Ishikawa discloses a radio-frequency amplifier wherein at least one of the first, second, third and fourth DC cut lines has a stub (parag.0011, 0038).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (Pub. No.: US 2002/0089385A1) and further in view of Ishikawa (Patent No.: US 6828867B2).

With respect to claim 11:

The rejection of claim 1 is incorporated; Ishikawa (Pub. No.: US 2002/0089385A1) did not explicitly discloses a radio-frequency wireless communication apparatus comprising a mixer to receive an intermediate-frequency signal and a local oscillation signal from a local oscillator through a slot line, convert the intermediate-frequency signal to a radio-frequency signal, and output the radio-frequency signal through a slot line; a radio-frequency amplifier to receive the radio-frequency signal from the mixer through a~ the input slot line of the input-side line portion and amplify the signal; and a slot antenna to transmit the radio-frequency signal output from a the output slot line of a the output-side line portion of the radio-frequency amplifier. Ishikawa (Patent No.: US 6828867B2) discloses a mixer (16, mix a) to receive an intermediate-frequency signal and a local oscillation signal from a local oscillator through a slot line, convert the intermediate-frequency signal to a radio-frequency signal, and output the radio-frequency signal

through a slot line, a radio-frequency amplifier (fig.16, Amp a) to receive the radio-frequency signal from the mixer (mix a) through the input slot line of the input-side line portion and amplify the signal; and a slot antenna (fig.16, antenna) to transmit the radio-frequency signal output from a the output slot line of a the output-side line portion of the radio-frequency amplifier (col.11, lines 27-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation in order to reduce conductor loss due to skin effect.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJIBOLA AKINYEMI whose telephone number is (571)270-1846. The examiner can normally be reached on monday- friday (8.30-5pm) Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, YUWEN PAN can be reached on (571) 272-7855. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. A./
Examiner, Art Unit 2618

/Yuwen Pan/
Primary Examiner, Art Unit 2618